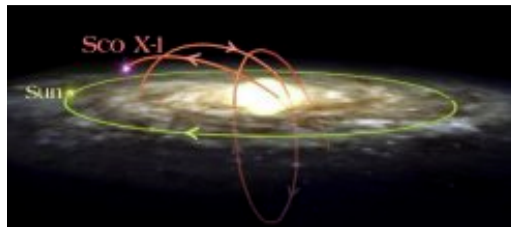




## Star-eating monster born in a far away cluster

Wednesday, 29 January 2003

The deadly embrace between a collapsing cannibal star and its hapless companion probably began in a globular cluster some 30 million years ago, a French-Argentinian team announced.



The orbit of the microquasar through the Milky Way galaxy (red line); our Sun's orbit (yellow) is shown for reference [Pic: NRAO/AUI/NSF] [Download an animated version here.](#)

The neutron star and its captured companion, called Scorpius X-1, were originally discovered in 1962. Dr Felix Mirabel and Dr Irapuan Rodrigues, astrophysicists at the French Atomic Energy Commission, used a number of published observations to calculate the path of the duo over the past few million years.

The analysis of the voracious collapsed star, now rocketing through our Milky Way galaxy as it cannibalises its companion, will appear in tomorrow's issue of the journal *Astronomy and Astrophysics*.

"This is the most accurate determination we have made of the path of an X-ray binary," said Mirabel, who is also a researcher at the Institute for Astronomy and Space Physics of Argentina.

Scorpius X-1 is about 9,000 light-years from Earth and is the brightest continuous source of X-rays beyond our Solar System.

These X-rays come from a rapidly-rotating disk around the superdense neutron star, which grows heavier as material is sucked away from its companion star. The disc is extremely hot and also spits out jets of subatomic particles at nearly the speed of light - a combination known as a microquasar.

The team traced the object's path backward in time by using positional data obtained with the Very Long Baseline Array, a string of 10 interconnected radio dishes from Hawaii in the Pacific through the continental United States and to the Virgin Islands in the Atlantic, along with ground-based optical telescopes.

They concluded that the neutron star and its companion have been travelling together for more than 30 million years.

Most stars in our Milky Way galaxy orbit its central core, but Scorpius X-1 follows an eccentric path above and below the galaxy's plane. This odd orbit raises questions about the microquasar's origin, they

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said.

According to Rodrigues, it is unlikely the neutron star originated in the Milky Way's central disc; it more likely came from far away clumps of stars in the outskirts of the galaxy called globular clusters. Had the microquasar originated in the Milky Way, something catastrophic must have happened to create its eccentric orbit.

Neutron stars are the remnants left over from the supernova explosion of an even more massive star.

"Probably, this neutron star picked up its companion and was thrown out of its globular cluster by a close encounter with other stars at the cluster's core," said Mirabel.

*Note: To download an MPEG animation of the Scorpius X-1 microquasar, [click here](#).*

Danny Kingsley - ABC Science Online

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